

ELECTROLYTIC PHOSPHATE CHEMICAL TREATMENT METHOD

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ABSTRACT OF THE DISCLOSURE

10 The object of the present invention is to provide an electrolytic phosphate chemical treatment method capable of improving the reaction efficiency on a metal surface (interface) by preventing the reaction in the solution phase so as to reliably prevent sludge formation during continuous treatment.

15 The present invention relates to a method of forming a film composed of a phosphate compound and a metal on the surface of an article to be treated by performing electrolytic treatment on a metal material article to be treated in a phosphate chemical treatment bath by contacting said metal material having electrical  
20 conductivity with said phosphate chemical treatment bath containing phosphate ions and phosphoric acid, nitrate ions, metal ions that form a complex with phosphate ions in said phosphate chemical treatment bath, and metal ions for which the dissolution-precipitation equilibrium  
25 potential at which ions dissolved in said phosphate chemical treatment bath are reduced and precipitate as metal is equal to or greater than -830 mV, which is the cathodic reaction decomposition potential of the solvent in the form of water when indicated as the hydrogen  
30 standard electrode potential, and is substantially free of metal ions other than those which are a component of the film; wherein the ORP (oxidation-reduction potential) of said phosphate chemical treatment bath (indicated as the potential relative to a standard hydrogen electrode)  
35 is maintained at equal to or greater than 700 mV.